32 Description of a new subgenus and a new species of *Traverella* Edmunds, with comments on its phylogeny and biology

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A new subgenus is described for the genus Traverella *(Leptophlebiidae) based on a new species from Argentina. This genus now includes two subgenera:* Traverella s. s., *with seven known species distributed from NE Argentina to Canada, and* T. (Zonda) *with one species from San Juan Province, Argentina. The erection of the new subgenus is based on the apomorphies established in a previous study on the phylogeny of the* Hermanella *complex (Flowers & Dominguez 1991).*

Introduction

Flowers and Dominguez (1991) revised the phylogenetic relationships of the *Hermanella* generic complex, establishing the monophyly of the group. Three genera were considered to be the components of the *Hermanella* complex: *Hermanella* Needham and Murphy, *Leentvaria* Demoulin and *Traverella* Edmunds. Flowers and Dominguez (1991) concluded that *Hermanella* and *Traverella* were composed of several monophyletic groups that must be described as separate entities. The components of *Hermanella* were revised in previous papers (Dominguez and Flowers 1989, Flowers and Dominguez 1991, Ferreira and Dominguez 1992, Savage and Dominguez 1992). As *Leentvaria* is known from nymphs only, its redescription is not currently possible.

This paper begins the revision of the *Traverella* group with the description of a new species and the erection of a new subgenus. The redescription of the genus *Traverella* and the treatment of the taxon *Traverella bradleyi* is being made by R. W. Flowers (Florida Agricultural and Mechanic University, Tallahassee, FL, pers. comm.).

Traverella *(*Traverella*) Edmunds, 1948*

Imago: vein ICu1 of fore wings attached to CuA. Male subgenital plate with long and narrow paired projections.

Mature Nymph: tusk present at inner anterior angle of maxillae; segment two of maxillary palpi long (more than two times length of segment one); segment three of labial palpi not elongated (0.8-1.2 times length of segment two). Fore tibia with a row of setae on its dorsum. Gills present on abdominal segment seven.

Thraulus albertanus *McDunnough*

Species included: *T. (T.) albertana* (McDunnough);*T. (T.) castanea* Kilgore & Allen; *T. (T.) lewisi* Allen; *T. (T.) montium* (Ulmer); *T. (T.) presidiana* (Traver); *T. (T.) valdemari* (Esben Petersen); *T. (T.) versicolor* (Eaton).

Distribution: this subgenus is distributed from Misiones Province (NE Argentina) to Canada, in a wide variety of environments.

Traverella *(*Zonda*) Dominguez new subgenus*

Imago: vein ICu1 of fore wings free basally (Fig. 2). Male subgenital plate with broad paired projections (Fig. 8).

Mature Nymph: tusk at inner anterior angle of maxillae absent or exhibited as a very small prominence in last instar; segment two of maxillary palpi short (1.1-2 times the length of segment one) (Fig. 12); segment three of labial palpi elongated (more than 1.2 times segment two) (Figs. 14-15). Fore tibia with a row of spines on its dorsum (Fig. 17a). Gills absent on abdominal segment seven.

Etymology: Zonda, for the name of a warm wind that blows in the area where the type material was collected.

Traverella calingastensis *n. sp.*

Species included: *Traverella (Z.) calingastensis* n. sp.

Distribution: I have collected both the type species and another species in Tucuman Province (NW Argentina). However, since the second species is known only as nymphs it will not be treated here. This undescribed species exhibits all *Zonda* subgeneric characters.

Traverella *(Zonda)* calingastensis *new species Figs. 1-23*

Male imago (in alcohol). Length: body, 8.2-9.2 mm; fore wings, 8.2-9.1 mm; hind wings, 1.4-1.6 mm. General colouration brown, abdomen lighter. Head: light brown, anterior margin darker. Upper portion of eyes orange-brown, lower portion blackish. Ocelli whitish, base black. Lateral ocelli twice diameter of median one. Antennae: scape and pedicel light brown, flagellum whitish. Thorax: pro-, meso- and metanotum light brown, with medial and paramedial lines lighter and margins of scutum and scutellum two blackish. Propleura whitish, meso- and metapleura dark brown, membranous portion whitish. Sterna dark brown. Wings (Figs. 2-3): membrane hyaline, stigmatic area translucent, wing base brown. Veins C, Sc and R_1 orange-brown, remaining veins paler, lighter posteriorly; 5-6 weak cross veins basad to bullae, 16-17 distad; 12-13 cross veins in hind wings. Legs: Prothoracic legs with coxae and trochanters greyish-brown, femora and tibiae lighter, with articulation darker, tarsi yellowish-white; meso and metathoracic legs with coxae and trochanters dark brown, femora whitish in basal 2/3, brown in distal 1/3, base of tibiae light brown, remainder of legs whitish. All tarsal claws (Fig. 5) whitish. Abdomen (Figs. 6-7): terga 1-6 translucent, with a median brownish-gray band, darker on the lateral margins, terga 7-10 brown; colouration of sterna similar to terga, but more diffuse. Genitalia (Fig. 8): subgenital plate yellowish-brown, darker on lateral margins; forceps and penes whitish, spines yellowish. Caudal filaments whitish, with basal 1/3 of each segment washed with brownish-gray.

Female imago (in alcohol). Length: body, 5.9-7.4 mm; fore wings, 8.2-9.2 mm; hind wings, 1.2-1.8 mm. Similar to male imago except as follows: head: two brownish-black spots between eyes; eyes black; antennae orange-brown. Thorax: dominant colouration bright orange-brown; legs orange-brown, lighter towards apex of leg. Abdomen: terga 1-7 orange-brown, 8-10 yellowish-brown; median bands on terga 1-7 thinner than in male imago; sterna yellow-brown.

Mature nymph (in alcohol, Fig. 1). Body length: 6.8-7.5 mm. General colouration yellowish-white. Head: yellowish-white with a blackish T-shaped spot between the lateral ocelli and the base projecting towards frontoclypeal suture; in females two triangular greyish-black spots close to the inner margins of eyes. Upper portion of male eyes reddish brown, lower portion blackish; eyes of females blackish. Antennae: scape and pedicel light brown, flagellum whitish. Mouthparts (Figs. 9-19): yellowish-white, setae of maxillae yellowish; hypopharynx whitish with yellowish gray setae. Thorax: terga yellowish-white with greyish spots close to lateral margins of pronotum and anterior angles of mesonotum; pleura and sterna whitish. Legs (Fig. 17a) whitish, with greyish spots near apex of femora; apical margin of tibiae and tarsi greyish-brown. Tarsal claws (Fig. 17b) whitish, apex brown-orange; with twelve denticles, the basal six smaller than the apical six. Abdomen: terga yellowish-white with greyish spots; spots vary from being restricted

to the lateral portion of each segment to covering it completely. Posterior margin of each tergum with three or four spines between adjacent setae (Fig. 19); sterna whitish. Gills (Fig. 18) whitish. Caudal filaments whitish with articulations light brown.

Eggs: yellowish, with sculpture as in Figs. 20-23.

Etymology: *calingastensis*, for the type locality, Calingasta.

Type materials: HOLOTYPE male imago, ARGENTINA, San Juan Prov., Calingasta, 1,350 m, Rio de los Patos, 28/I/82, E. Dominguez; ALLOTYPE female imago, same data as holotype. Paratypes: 28 male imagos, six female imagos, one male subimago, two female subimagos, 140 nymphs (same data as holotype); 100 nymphs, (same data as holotype except date 7/X/81); one male imago, Camping de Zonda, near San Juan city, 29/I/82; 41 nymphs, Puchuzún, 30 km N Calingasta, Rio El Castaño, 28/I/82. All the material was collected by E. Dominguez and is deposited in the collection of Instituto-Fundación Miguel Lillo, Tucumán, except: three male imagos, one female imago and ten nymphs, each in the Collection of Florida A & M University, Tallahassee, Florida and the National Museum of Natural History, Washington, D.C. The association of the adult and nymph was made from rearings.

Biology: the nymphs of *T. (Z.) calingastensis* were restricted to the rocky sections of the Rio de los Patos and El Castaño rivers. Mature nymphs were collected in October and January. The adults were collected in January. Subimagos emerged at dusk and molted to imagos at dawn. The nuptial flight took place between 8:30 and 11:00 a.m., very close to the rocky areas of the river but over land. The swarm was located at a height between five and eight m.

Diagnosis: the male imago of this species can be separated from the male imagos of all other species of *Traverella* by the following combination of characters: 1) the shape of the male genitalia (Fig. 8), and 2) the abdominal colour pattern (Figs. 6-7).

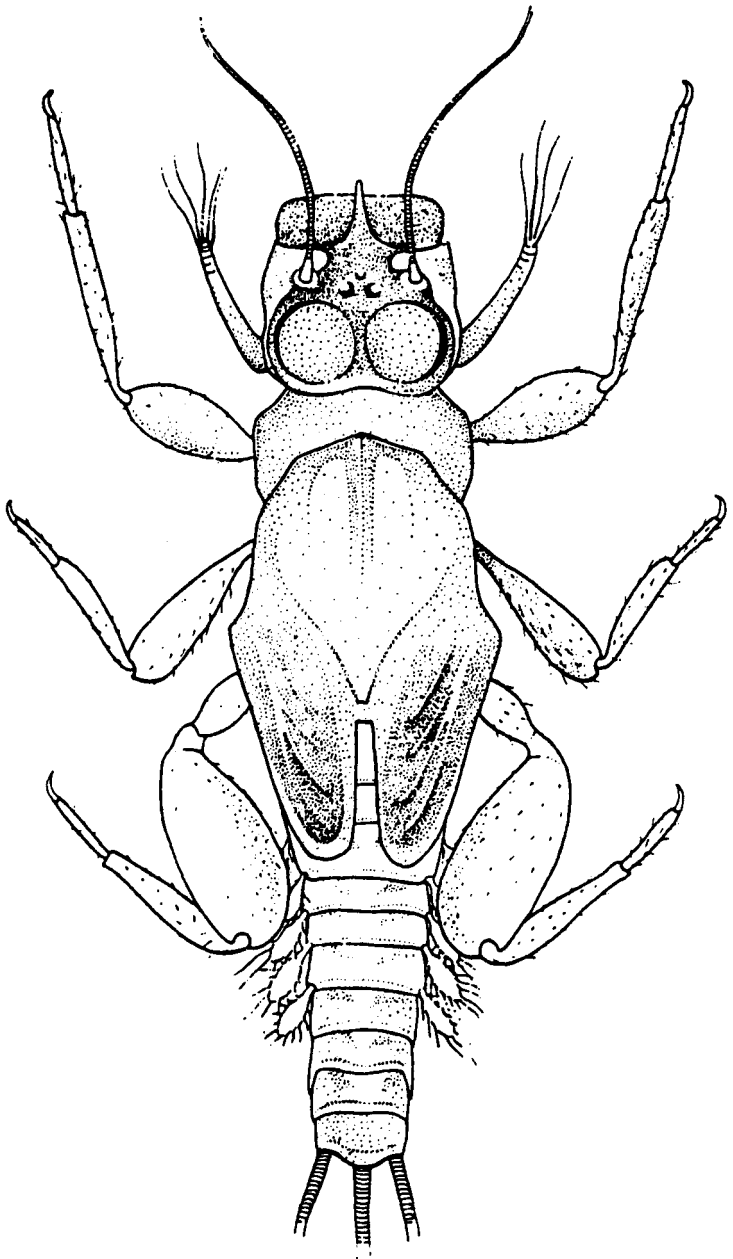
In some male imagos the femora and tibiae are light brown and in some female imagos the pattern on the abdominal terga is variable in extension.

The length of the nymphal clypeal projections varied widely (Figs. 16a-e). They appear to be correlated with the length of the nymph, with longer nymphs having longer projections.

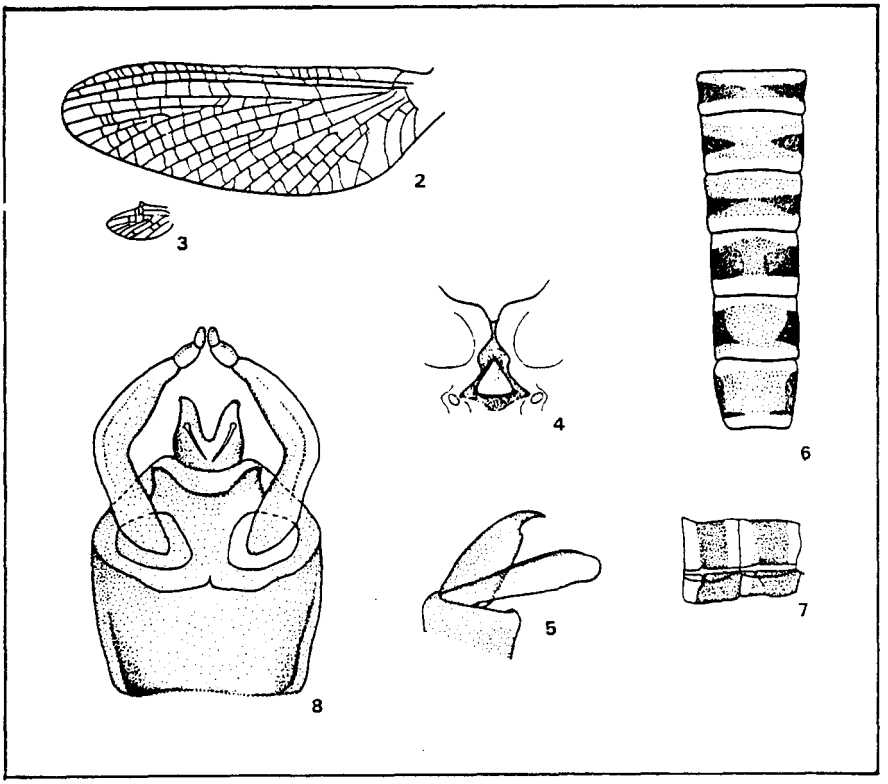
Discussion

The subgenus *Traverella s.s.* has as apomorphy the long and slender male subgenital plates. The autapomorphy of the single species included in the subgenus *Traverella (Zonda)* is the segment three of the labial palpi 1.2 times longer than segment two.

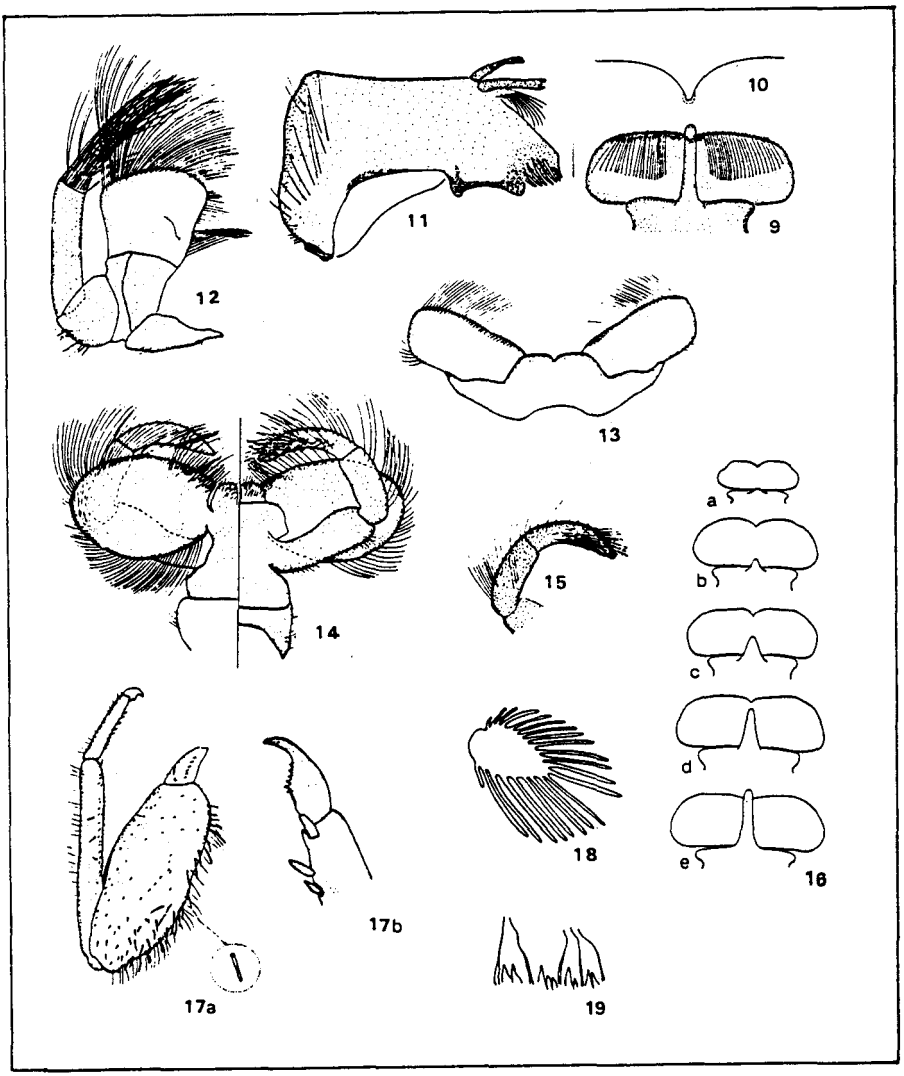
Figure 1. **Nymph of *Traverella (Z.) calingastensis sp. nov.***



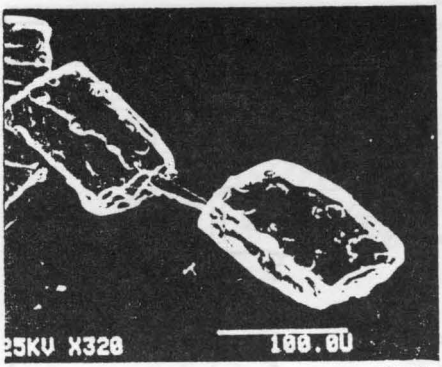
Figures 2-8. **Male imago of *Traverella (Z.) calingastensis sp. nov.*: 2, fore wing; 3, hind wing; 4, prosternum; 5, tarsal claws; 6, abdominal terga: 2-7; 7, lateral view of abdominal segments 5-6; 8, genitalia, ventral view.**



Figures 9-19. Nymph of *Traverella (Z.) calingastensis sp. nov.*: 9, dorsal view of labrum (mature nymph); 10, detail of anteromedian emargination of labrum; 11, left mandible; 12, left maxilla; 13, hypopharynx; 14, labium (left dorsal, right ventral); 15, detail of segments 2-3 of labial palp, dorsal); 16, variation of differential development of clypeal projection in different nymphal size (in mm: a, 4.8; b, 5.9; c, 6.2; d, 7.2; e, 8.1); 17a, prothoracic leg (dorsal view), with detail of spines; 17b, claw; 18, gill 2; 19, spines on posterior margin of tergum 5.



Figures 20-23. Eggs of *Traverella (Z.) calingastensis* sp. nov.: 20-21, lateral view; 22-23, enlarged.



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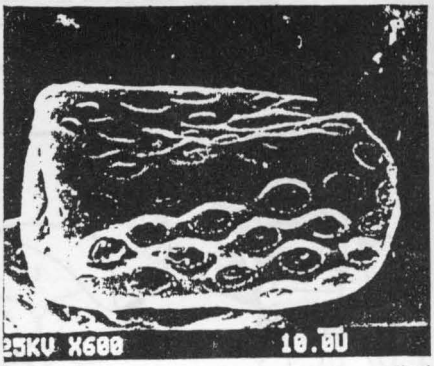

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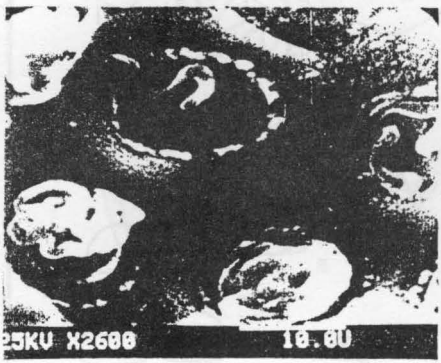

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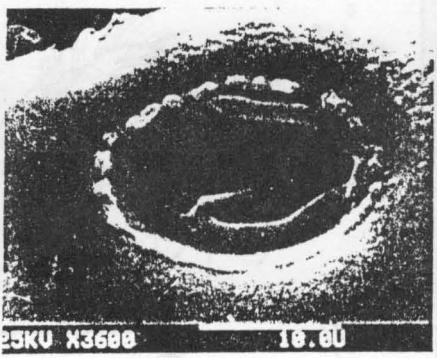

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It is noteworthy that the distribution of *T. (Zonda)* is restricted to San Juan and Tucumán Province in the Andean range in Western Argentina (66°W), while the species of *Traverella s.s.* appear to be more widely distributed along the lowland rain forest, from Misiones Province (55°W) northward with no areas of overlapping. This situation was also observed in other genera of Leptophlebiidae (*Thraulodes*, *Farrodes*).

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